## REMARKS

Applicant has carefully considered the Office Action of March 6, 2006, amending claims **1** through **11.** The present response is intended to fully address all points of objection raised by the Examiner, and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Thus, claims **1 - 11** have been amended and therefore claims **1- 11** remain in the case.

The Examiner has objected to claims 1 and 11 because of the following informalities: Claim 1 is objected to because it recites "an hierachical" in line 6. Also in claim 1 (line 6) the word "hierachical" needs to be changed to "hierarchical." Claim 11 is objected to because the claim depends to itself.

Accordingly, the word "hierachical" has been deleted in claim 1 and claim **11** has been corrected to depend on claim 10. Therefore clarity and accuracy have been achieved to overcome this objection.

The Drawings are objected to because of improper shading for figures:1-9. 37 CFR. 1.84 (a) (1) dictates the sole use of black and white drawings. All the drawings, Figs. 1-9, have been replaced accodingly.

Claim **1** is rejected under 35 U.S.C. 112 (2nd paragraph). Use of the term "some" in line 1 renders the claim indefinite. Claim **1** recites "the knowledge base" in line 1. There is no antecedent basis for this limitation in the claim.

Accordingly, the word "some" has been deleted in claim **1** and "the knowledge base" has been changed to "a knowledge base."

The Examiner has rejected claims **1-6** and **8-11** under 35 U.S.C. 102(e) as being anticipated by Szabo (US Patent No. 7,181,438 B1).

Relative to the method of claim 1 of **Sebbane**, each of the **4** steps is contrasted with a quote from *Szabo*:

**Step 1: submission of a hierachical query** (...i. e., *"The query generation process may contain a knowledge base including a thesaurus* that *has*

*predetermined and embedded complex search queries, or use natural .language processing, or fuzzy logic, or tree structures, or* ***hierarchical relationship*** *or a set of commands that allow persons seeking information to formulate their queries."(Col. 8 lines 6-12));*

**Step 2: recording the queries of the organization, comprising saving-submitter and organization information** (*i.e., "In a further refinement, search results found through a query outside the directory, for example through a metasearch process, can be* ***organized under directory headings****. In this case, the directory may be queried as to whether and where it references a web resource, and if it does, the resource(s) may be saved to that (those) locations; "(Col. 57 lines 13-19));*

**Step 3: comparing queries using weight matrix generated by a distance function (i.e.,** *"Frequency programs have been developed by the travel industry to promote customer loyalty. An example of such a program is a "frequent flyer" program. According to such a program, when a traveler books a flight, a certain amount of "mileage ,points" is calculated by a* ***formula using the distance of the destination*** *as a parameter."(col. 24 lines 21-26));*

**Step 4: and clustering of the queries into a semantic structure (i.e.,** *"This intelligent assistance preferably involves an interactive communication between the user and search engine, wherein a context, e.g.,* ***semantic taxonomic placement****, of the search query is successively defined and refined."(Col. 47 lines 3-6)).*

Szabo is describing a graphical environment serving as a buffer/platform for sending queries and arranging results received from a search engine. It does not involve technological innovations or any other new methods for searching information.

Apparently most of the Examiner's quotes from Szabo are the result of matching keywords, regardless of their context, resulting in many appearances at first glance of similarities between Szabo and the present application.

**Step 1: Szabo** refers to a knowledge base of queries in the form of a hierarchical **tree structure** that includes a thesaurus. By contrast, **Sebbane** compares **unrelated** queries using a weight matrix generated by a distance function; no reference is made to a 'thesaurus,' 'fuzzy logic' or 'NLP' method being involved with the procedure. **Sebbane** refers to queries

having a "bottom-up" agglomerative clustering structure. The submitted queries are compared using a matrix of a 'strict' distance function, as opposed to the 'fuzzy logic' stochastic algorithms mentioned by **Szabo**.

**Step 2: Szabo** refers to the organization of **information**. By contrast, **Sebbane** refers to the information within an **Organization**, using a query as a set of organizational references pointing to the submitter of the query, his position, his department , security authorization, etc.

**Step 3: Szabo** describes frequency programs designed for a "frequent flyer" intended to calculate a 2-dimensional **geographical distance** when calculating a flying program and finding the best path to global destinations for a traveler. By contrast, **Sebbane** refers to a semantic structure as the results to calculate an abstract n-dimensional **mathematical 'distance'** in hyperspace. This is a numerical measurement found between different words in a language expression having the same frequency of appearances in queries by keywords.

**Step 4: Szabo** teaches: "This intelligent assistance preferably involves an interactive communication between the user and search engine, wherein a context, e.g., semantic taxonomic placement, of the search query is successively defined and refined." **Szabo continues**: "Preferably, after the context of the query is defined, the user is presented with a hierarchal tree of contents, i.e., a branched hierarchical graphic representation of the information and linkages, for confirmation. In the event that the relayed context is accurate, a simple confirmation is accepted. On the other hand, **where the context is not accurate or of inappropriate scope, the user may change or refine the context. In this way, the number of complete database searches is reduced, and the results tailored to the user's expressed requirements**. **By providing a hierarchical tree of contexts, the user is prompted to select or accept the narrowest definition scope of the query**. In most instances, this will result in a narrower search than a simple one or two word query, but it may also provide an intelligent means for broadening the scope while avoiding an undue number of returned irrelevant hits." Here Szabo refers to a definitive semantic predefined taxonomic locator where a search query can be located as relevant to other words according to a definition from a taxonomy's classifications and sub-classifications. By contrast, **Sebbane** refers to an ***iterative* update of the semantic structure.** The distance is calculated between words in queries providing constantly updated clusters by weights reflecting semantic relevancy, continuously reconstructing and setting the semantic structure in a new design, so as to integrate new requests with previous results. This enables the system to arrive at outcomes with new results depending on the new structure.

**New step 5**: **rating** of a new query relative to the nearest of said clusters, wherein said new queries can be evaluated in one of real-time and periodically, to determine whether to one of: add said query to an existing cluster; and form a separate "satellite" cluster. According

to **Szebo**, the new query is sent to a **static** hierarchical taxonomy structure, while **Sebbane** intergrates a new query into an **iteratively updated** cluster structure.

From paragrqaph [80] of the present application "...yielding a more focused clustering that matches the knowledge areas reflected by the queries. In addition, a novel method was developed for the iterative step of the algorithm."

Claim 2 of **Sebanne** is a further step contrasted with a quote from *Szabo*:

**gathering data for the organization and entering it in the organization DB** *("It is well known in the prior art of information retrieval systems to permit a user to specify a selected subject within a larger group of subjects for searching. For example, a user may wish to search only sports literature, medical literature or art literature. This avoids unnecessary searching through database documents that are not relevant to the user's subject of interest. i.e., "In order to provide this capability, information retrieval systems must generally categorize documents received from publishers (or drawn from accessible databases) according to their subject, prior to adding them to the database."(Col. 9 lines 12-16)).*

**Szabo** specifically refers to categorizing as a necessity for limiting search results when users wish to specify a selected subject within a larger group of subjects as received from publishers. **Szabo** discloses that adding a subject to the database should be conducted after, and separately from, the earlier procedure of categorizing it into limited subject matters. By contrast, **Sebbane** notes a process of gathering the total data results. This includes queries submitted by the users and documents retrieved responsive to the queries as a combined source of the sum of data and items needed. The present invention then instantly performs the matching of keywords into clusters from the selected queries and documents, and only then creates the categories by subject-topics of relevant issues for the system to be able to help users on-the-spot with their newly submitted queries, thus always recreating the relevant categories corresponding to the given query.

In claim 3 of **Sebbane**, the further step of claim 2 is divided into Steps, each of which is contrasted with a quote from *Szabo*:

**Step 1: gathering data into the organization DB** *(i.e., "In order to provide this capability, information retrieval systems must generally categorize documents received from publishers (or drawn from accessible databases) according to their subject, prior to adding them to the database."(Col. 9 lines 12-16));*

**Step 2: generating a vector structure of the data** *(i. e. , "The information is stored in an inverted index file, which may also be used to calculate document link vectors for each hyperlink pointing to a particular document. "(Col. 22 lines 46-49));*

**Step 3: and using the vector structure in order to form semantic familiarities (clustering words, i.e., "connections")** *(i.e., "When a query is entered, the search engine finds all document vectors for documents having the query terms in their anchor text. A query vector is also calculated, and the dot product of the query vector and each document link vector is calculated. The dot products relating to a particular document are summed to determine the relevance ranking for each document. "(Col. 22 lines 49-55)).*

**Step 1:** Again, according to claim 3, **Sebbane** adds the data into the organization DB is being done procedurally before and not after categorizing the raw data into relevant categories.

**Step 2: Szabo** refers to information stored in an inverted index file, which may also be used to calculate document link vectors for each hyperlink pointing to a particular document. By contrast, **Sebbane's** vector format is created in order to find reoccurrences of different words at the same location of the same documents, thereby creating a matching matrix connecting two or more words together, as if they are "relatives" participating in a same general concept. The vector represents a specific structure designed for easy and swift comparison between two data objects and to find out if the objects co-appearing within the whole DB with a high probability rate, and therefore are closely attached in meaning.

**Step 3: Szabo** calculates a query vector and the dot product of the query vector and each document link vector is also calculated. By contrast, **Sebbane's** vector data-index represents a specific data structure designed to compare co-appearances between two and more words as relative objects and to find if objects are interconnected with a high probability rate and are closely associated in meaning, and thus have similar semantic features. Moreover, **Sebbane** refers to a vector structure for creating a data model of a DB documentation repository and not for use as a ranking method referring the document sorting mechanism. The ranking method is a set roles designed to calculate the output results when referring to an anchor query input.

Claim 4 of **Sebanne** is another further step contrasted with a quote from *Szabo*: **enhancing the queries for later pre-processing of the data, in order to best exploit the**

**latter element of (claim) 3** (i. e. , *"Advantageously, the information associated with this web page may be updated and enhanced automatically, to represent a history of use by the user." (Col. 49 lines 9-12)).*

**Szabo** refers to a set of Web-pages as being generally associated and thus all pages are enhanced as reference information. By contrast, **Sebbane** refers to a specific method designed for enhancing keywords from queries after formulating each word with a specific weight using a unique, complex, robust distance function, set in a well-defined and specific order prior to enhancing the relevant word in a relevant document.

In claim 5 of **Sebbane**, the further step of claim 4 is divided into Steps, each of which is contrasted with a quote from *Szabo*:

**Step 1: enhancing words appearing in queries by multiplying the number of appearances with a constant** *(i. . e., "Therefore, for example, user's query might be "sports", but user selects the taxonomic node "baseball", or a web-page in which the ward "baseball" is prominent; user's query string might profitably be expanded to "sports AND baseball, " or just "baseball," for the purpose of a search of other materials, for example, through a metasearch procedure of other search engines. By a like procedure, OR conditions and NOT (dissimilarity) might be appended to user's query, or used to modify user's query, or replace user's query, to enhance such a follow-on search. "(Col. 76 lines 12-22));*

**Step 2: comparing the distribution of a word within the organization DB and *its* distribution in Natural Language (NL)** *(i. e., "User enters a string of words onto a character-based "edit line" and then strikes the "enter" key on user's keyboard or selects a search button using a pointing device. The string of words may be fashioned by a user into a Boolean logical sentence, employing the words "AND," "OR," and "NOT," but more typically the user enters a set of words in so-called "natural language" that lack logical connectors, and software called a "parser" takes user's natural language query and estimates which logical connections exist among the words."(Col. 3 lines 51-60));*

**Step 3: and weighting words appearances in the DB and the queries relative to appearances in the NL** *(i. e. "Words, particularly simple verbs, conjunctions and prepositions are often preemptively excluded from the term index as presumptively carrying no significant informational weight. Various heuristics can be employed to identify other words that appear too frequently within a document collection to likely serve to contextually differentiate the various*

*documents of the collection. "(Col. 25 lines 24-30)).*

**Sebbane** emphasizes a word from the queries repository in order to focus the system and the user on its reference. By contrast, **Szabo** does not enhance different words in relative to other words.

Claim 8 of **Sebanne** is yet a further step contrasted with a quote from *Szabo:* **using queries' data for searching information (implementing a search engine).** *(i. e., "Generally speaking, search engines for the World Wide Web (WWW, or simPly "Web") aid users in locating resources among the estimated present one billion addressable sites on the Web. Search engines for the web generally employ a type of computer software called a "spider" to scan a proprietary database that is a subset of the resources available on the Web. "(Col. 1 lines $0-56)).*

Here **Szabo** generally describes what search engines do. **Szabo** does not claim this as his own. In any case, Szabo describes how search engines work in the Internet (World Wide Web) in general. By contrast, **Sebbane** searches information either in an <u>Intranet</u>, an <u>organizational DB</u> or the <u>Internet</u>. Furthermore, part of the **Sebbane** application is all about implementing **<u>a new method</u>** for searching and retrieving data.

In claim 9 of **Sebbane** , the further step of claim 8 is divided into Steps, each of which is contrasted with a quote from *Szabo*: [background of invention]

**Step 1: searching information using the queries' structure (clusters)** *(The query generation process may contain a knowledge base including. a thesaurus that has predetermined and embedded complex search queries, or use natural language processing, or fuzzy logic, or tree structures, or hierarchical relationship or a set of commands that allow persons seeking information to formulate their queries." (Col. 8 lines 6-12)).*

**Step 2: presenting queries' structure with respect to a new query (when a user presents a new query, the system rates the nearest clusters according to the new query)** *(i.e., "The search process can utilize any available index and search engine techniques including Boolean, vector, and probabilistic, as long as a substantial portion of the entire domain of archived textual data is searched for each query and all documents found are returned to the organizing process." (Col. 8, lines 12-17));*

**Step 3: and presenting submitted queries in order to facilitate the submission of a new query** (*i.e., "The search results are then presented to the user and arranged by category along with an indication as to the number of relevant documents found in each category. The user may then examine search results in multiple formats, allowing the user to view as much of the document as the user deems necessary." (Col. 8, lines 22- 27)).*

**Step 1:** According to **Szabo** one can form a query by <u>either</u> predetermined embedded queries <u>or</u> a process that allows a person to formulate queries, both of the ways using a thesaurus. By contrast, **Sebbane** provides a dynamic database of queries formed automatically by the user. Queries in the database are clustered using an algorithm that forms dynamic structures that change progressively and automatically as a result of new queries entered into the database. **Sebbane** does not use a thesaurus. A user can be exposed either to his unique, automatically formed structures, or to other users' unique structures form.

The three main differences between **Szabo** and **Sebbane** are: 1. **Szabo** uses predetermined structures, or structures formed by a predetermined knowledge base such as a thesaurus. **Sebbane** does not use predetermined knowledge during the process of generation a query structure. 2. For **Sebbane** the creation of the queries' structure is dynamic, automatic, and is performed by a unique algorithm. 3. **Szabo** uses his structures to form a query. **Sebbane** does not. **Sebbane** elaborates a query already formed by the user and more importantly performs a semantic text analysis of the results.

**Step 2:** **Sebbane** discloses how the query structure helps the user to enlarge and elaborate his submitted query. This process is used also for semantic text analysis. **Szabo** only claims the need for the search to include a substantial portion of a textual domain and that the results are returned to the relevant process. He does not claim anything regarding the search, but only mentions the existing techniques that where available at the time of the invention. **Szabo** is interested in how the results are presented, rather than the search process.

**Step 3:** This citation from **Szabo's** invention refers to the search results, while **Sebbane** refers to a stage before the query was submitted. **Sebbane** explains how the user can exploit both his own and other users' query structures. This is done right after phrasing the query, but before the actual submission to the search engine.

**Szabo** explains how he would like to arrange the results received from a search engine. **Szabo** uses predetermined categories to arrange the results. **Sebbane**, on the other

hand, uses a specifically designed algorithm to generate ON-LINE, semantic categories. The categories are the result of a semantic text analysis performed by unique algorithms.

Claim 10 of **Sebbane** is one further step contrasted with a quote from *Szabo:*
**using the queries structure to create an organization map** *(i.e.,. "graphic representation implying a specific search path that a user may take in examining the available information, the interface system comprising means for generating a coded data map reflecting the organization of the entire information within the information base" (Col. 18 lines 31-35)).*

When **Szabo** refers to organization he means the organization of information. **Sebbane** refers to the word organization as an entity, e.g., a business organization. According to **Sebbane the** entire structure of the queries formed by algorithms can reflect the structure of the organization, e.g. its sections and departments. Thus, the system is capable of automatically generating an organization map that presents how the Organization is built according to the distribution and sharing of information and knowledge.

In claim 11 of **Sebbane**, the further step of claim 10 is divided into two (2) Steps, each of which is contrasted with a quote from *Szabo*: [background of Invention]

**Step 1: developing a method that facilitates the designation of experts concerning the requested data** *(i.e., "The SEMNET developers propose organizing component data units of an information base into various levels of hierarchy. At the lowest level of hierarchy, the most basic data units are organized into various sets, or cluster-objects of related information." (Col. 17 lines 43-48));*

**Step 2: and providing a graphical organization map of the data occurrences and the experts** *(i.e. , "graphic presentation means generating the dynamic graphic representation based on the data map, the dynamic graphic representation comprising at least one molecule for the first hierarchical level of organization, the at least one first-hierarchical-level molecule having at least one first-hierarchical-level thread of multiple first-hierarchical-level nodes connected in sequence" (Col. 18 lines 40-47)).*

**Step 1:** In this claim **Sebbane** addresses the formation of the distribution of information in an organization, which is an organization as an entity and not the "organization of information" as referred to by **Szabo**. **Sebbane** does this by automatically mapping the information experts in the organization using a query structure formed by the queries of all the

users. Further, **Szabo** describes a typical structure of a basic *hierarchical* data-map using threads and nodes and 'how to move' maneuvers between the different levels of the data-structure. By contrast, **Sebbane** refers to a unique information-map comprising the users and the location-specific information according to specific times and frequencies.

**Step 2:** Here, as well, when Szabo uses the word organization he means the organization of information, while **Sebbane** uses it to refer to a business organization, or any other sort of an organization, as an entity.

The Examiner has rejected claim **7** under 35 U.S.C. 103(a) as being unpatentable over Szabo, US Patent No. 7,181,438 in view of Everett US2004/0024790 A1.

In claim 7 of **Sebbane**, the further step of claim 6 is divided into four(4) Steps, each of which is contrasted with a quote from *Szabo or Everett*:

**Step 1: using information theories in order to assemble and represent the data, thereby overcoming an information bottleneck;** *Everett: (i.e, "The KnOS's efficiency of operation, measured in processor time required per end-user transaction, can be corrected, post implementation, to eliminate any bottlenecks y identifying the correct "context" for ea ch bottleneck and then segmenting the VK Sets into dedicated tag sets by context. All KnOS bottlenecks are related to clusters of VK Sets with overly broad or muddled contexts" (Par. 44.1));*

**Step 2: using queries as prior knowledge for the information bottleneck** *Everett: (i.e., "Because the KnOS architecture is 100% parallel, the equivalent of the relational select operation (step #6) can be separated from the equivalent to the relationaljoin. The .KnOS equivalent of the join opera tion (pooling/filtering), which is the core bottleneck of a DBMS, can be run at any layer of the computing stack-the database processor, the web application server or the desktop. "(Par. 42.5 lines 1-6));*

**Step 3: clustering data (agglomerative, sequential clustering)** *Everett: (i.e., "However, the number of database processors can be expanded across a loosely coupled cluster architecture either to service greater numbers of concurrent sessions or to service disk farms that measure into the terabyte range."(Par. 412 lines 1,4-17);*

**Step 4: and using queries as a predisposed factor, thereby replacing the random factor when performing clustering.** *Szabo: (i.e., "However, in many cases, cookies are preferably supplemented with or replaced by information stored at the server level, and accessible to user through a security recognition*

*scheme. Thus, the cookie preferably provides an address within a server database for critical information, rather than the information itself." (Col. 60 lines 3-8)).*

**Step 1:** When **Everett** uses the term bottlenecks he means a hardware standard bottleneck in preformance resulting from a work overload because of many tasks being preformed by an operating system at the same time with limited capacity. **Sebbane** uses the word bottleneck when describing large textual databases that represent a problem of selecting and delivering the most relevant data in minimum time and after a quick analysis of the database in response to numerus requests. The process represents a bottleneck both in quickness and the relevance of the answers, using limited channels of communication. Thus, Sebbane uses algorithms to cluster information by compressing it through a figurative bottleneck. **Everett** is trying to eliminate bottlenecks in KnOS [= Knowledge Operation Systems], while **Sebbane** uses "informational bottleneck" algorithms to cluster textual data.

**Step 2:** Again, **Everett** teaches a method to avoid bottlenecks in KnOS. **Sebbane** claims to improve algorithms that rely on "Informational Bottleneck Theory."

**Step 3:** The **Everett** patent relates to hardware performance of processors. In this paragraph **Everett** refers to a physical acctual structure of clusters. By contrast, **Sebanne** refers to a software clustering method for clustering textual information as a result of a semantic analysis.

**Step 4:** **Szabo** refers to cookies as indexes for faster accessibility to information. ("They provide and address within a server.") **Sebbane**, on the other hand, does not address this problem, but rather uses a query structure to semantically analyze the textual data. **Sebbane** uses algorithms from the field of "information theory." These algorithms use random prior values as there starting point. **Sebbane** uses a query structure as prior knowledge supplied for the "bottleneck" algorithms to improve their analysis power and accuracy by replacing the random prior values with actual values.

Therefore claim **1** is deemed to be patentable, and the dependent claims **2-11** are deemed patentable.

It is respectfully put forward by the Applicant that there is no reason to consider the prior art references to Parr and Goodwin as rendering the present invention unpatentable, since they include no provision for totally eliminating the need for writing code in any programming language to implement the application.

Therefore, claims **1 – 11** are deemed to be patentable.

In view of the foregoing remarks, all of the claims in the application are deemed to be allowable. Further reconsideration and allowance of the application is respectfully requested at an early date.

Respectfully submitted,

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